Exam 1 (B)

$\boxed{1}$ 12 char code from A .. Z & 0 .. 9

(a) 36^{12} (b) $P(36,12)$ (c) $2\cdot 11\cdot P(34,10)$

(d) $P(36,12) - P(35,12) = \binom{12}{1} P(35,11)$

(e) $36^2 - 36 - 36 - 1 + 1$ (f) $36\cdot 35^4$

(g) $36^7 + 36^7$ (h) $\binom{12}{3}\cdot 35^9$

(i) $\binom{12}{3}\binom{9}{5} 34^4$ (j) 34^{12}

(k) $\underset{\text{no S}}{35^{12}} + \underset{\text{no L}}{35^{12}} - \underset{\text{neither}}{34^{12}}$

$\boxed{2}$ 28 candy to 7 friends

(a) 7^{28} (b) 6^{22} (c) $7^{28} - 6^{28}$

(d) $\dfrac{28!}{(4!)^7}$ (e) $\dfrac{28!}{(3!)^7\cdot 7!}$

(f) $\binom{34}{6}$ (g) $\binom{29}{5}$ (h) $\binom{30}{6}$

(i) $\binom{35}{7}$ (j) 1

$\boxed{3}$ (a) place 1 $43\cdot 30$
place 2 $42\cdot 29$
⋮
place 9 $35\cdot 22$

$\Rightarrow P(43,9)\cdot P(30,9)$

(b) Each gives 9! answers to (a), so

$$\frac{P(43,9)\cdot P(30,9)}{9!}$$

$\boxed{4}$ (a) $\binom{32}{15}$ (b) $\binom{32}{15}-\binom{23}{15}$

all women

(c) $\binom{32}{15}-\binom{23}{6}$

all men get, 6 lefts.